



Test Report

MULTIFUNCTIONAL PRODUCTS

Ricoh Aficio 2022/2022SP

22 PPM / SEGMENT 2

Copier/Printer/Fax/Scanner



Test period duration:
Three months, including
a 52,500-impression durability test

Manufacturer:

Ricoh Corporation
West Caldwell, NJ
Made in the Korea

Serial number: J833103204

Suggested retail price: \$6,775 for the configuration tested, the Aficio 2022SP, which includes the print/scan controller as standard; \$12,555 as tested with the optional RADF (\$1,265), 1,000-sheet finisher (\$1,410), hard drive option (\$350), fax option (\$1,095), second-line option (\$650), handset (\$65) and Adobe PostScript 3 kit (\$595). The Aficio 2022, priced at \$5,245, is a configuration for which the print/scan controller is an option.

Type: Desktop, CCD digital flatbed scanner, laser imaging, bond sheet paper, dry toner, dual-component developing, heat and pressure fusing multifunctional device with standard copy, network print and scan (to file and e-mail) functions (for the configuration tested, the Ricoh Aficio 2022SP) and optional walk-up fax and LAN fax.

Manufacturer's recommended monthly volume: Up to 35,000 impressions.

BLI's recommended monthly volume for optimum performance: Up to 25,000 impressions.



GENERAL APPRAISAL

An exceptional performer among tested Segment 2 multifunctional products, the Ricoh Aficio 2022SP, a 22-ppm Segment 2 multifunctional product configured standard with the print/scan controller, offers strong reliability, record-breaking productivity, good output quality, very good ease of use and highly automated procedures for setup on the network.

Offering copy and network print and scan functionality in its standard configuration, the Ricoh Aficio 2022SP was also tested with its optional walk-up fax option with dual lines. The test unit proved to be highly reliable, completing its three-month evaluation, which included a 52,500-impression durability test, without any service required. Even more impressive is that the unit did not experience

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General Appraisal *continued*

even a single misfeed during its test, which gives it the best misfeed record for currently available Segment 2 units tested.

The Aficio 2022SP also proved to be the most productive Segment 2 unit tested, with overall efficiency rates that, while competitive in simplex copy and print mode, are generally well above average in all duplex copy and print modes. In fact, its overall efficiency rates are the highest for Segment 2 models tested in the 1:2 and 2:2 duplex copy modes and in the simplex and duplex print modes when using the PostScript driver. Its print efficiency rates are even higher when printing from the PCL driver. Also noteworthy is that while its first-print-out times from the PostScript driver for the Word and PageMaker files used in the tests are competitive, first-print-out time is faster than the average for the PDF file and faster than those of all Segment 2 models tested for the TIFF and JPG files used in the raster tests. First-print-out times are also good when printing from the PCL driver, even for the TIFF file. The unit's first-copy time is competitive.

Another strength of the Aficio 2022SP is its ease of use, both for walk-up functions and from the desktop for setup on the network and use as a printer. The control panel is well-designed, featuring dedicated keys for each function and an easy-to-navigate menu system. Contributing to good overall ease of use are simple procedures for loading paper, removing misfeeds and replacing toner and excellent feedback on device and print job status to users at their PCs. For example, users receive pop-up error and print-job completion messages, but are also kept informed via icon alerts on the toolbar and audible alerts.

Testing also revealed that the Aficio 2022SP offers good multitasking capabilities for a unit in this range, enabling a copy job to be programmed while another copy or print job is in progress. Moreover, one of the functions can be established as the priority function. For example, copy mode can be established as the priority mode so that the jobs of walk-up users will take precedence over print jobs. Other functions can also be established as the priority function and if "Interleave" is selected as the priority mode, multiple jobs can be output by alternating between several pages of each, with the pages from a print job being output to one exit tray and the pages of a copy job being output to another tray. Configured as it was with the dual-line fax option, the unit even allows simultaneous transmission and reception of faxes, effectively doubling fax capacity.

Connectivity

The Ricoh Aficio 2022SP is a configuration that comes standard with the print/scan controller. (Ricoh also offers the Aficio 2022, for which network printing and scanning are optional.) BLI test technicians were very impressed with the highly automated procedures for installing print drivers and setting the device up on the network which, unlike other systems tested, does not even involve the entry of an IP address. SmartDeviceMonitor, formerly called SmartNetMonitor, automatically locates Ricoh and MIB-compliant non-Ricoh devices on the network and displays them, so the administrator simply needs to select the desired device. Also noteworthy is that through an alliance with Hewlett-Packard, Ricoh provides plug-ins for HP Web Jetadmin, which can be downloaded for free from Ricoh's Web site, for its prod-

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General Appraisal *continued*

ucts; the specific plug-in for the Aficio 2022SP is slated for availability at the end of June, but a plug-in for another Ricoh product (for example, the 2045) will provide all the same functionality, except for the ability to display a bitmap image of the 2022. PCL 5e, PCL 6 and RPCS (Ricoh Printing Command Stream) print drivers are standard with the print/scan controller, while optional Adobe PostScript 3 was also tested. The administrator can initiate automatic detection of the unit's configured accessories (the configuration will be illustrated in the driver), eliminating the need for an administrator to manually specify configuration information. The drivers, which support Windows 95/98, 2000, Me, XP and NT 4.0, are easy to use and enable users to select paper sources and output trays by clicking on the appropriate area of a graphical representation of the product. They offer a good feature set, including all the capabilities that would be expected for a unit in this range, plus the ability to build a job that pulls stock from up to five paper sources and a chaptering feature. In addition to enabling administration, the SmartDeviceMonitor utility, which is available in administrator and end-user versions, provides excellent device and print job status, including pop-up messages.

In its standard configuration, the Ricoh Aficio 2022SP offers embedded scan to e-mail, scan to file (via FTP and SMB) with support for TIFF, PDF and JPG file formats, and support for T.37 Internet fax, which all performed well in BLI's tests. The scan-to-e-mail function supports LDAP, so users can access e-mail addresses on a network mail server directly from the control panel of the Aficio 2022, eliminating the need to program e-mail addresses that may already reside on a mail server. In addition,

however, e-mail destinations, along with fax destinations and shared folder locations for scanning to file, can be conveniently programmed remotely from the Web utility. Destinations can also be entered on the fly via the control panel's QWERTY keypad. The system comes bundled with DeskTopBinder Lite to enable an unlimited number of users to work with scanned documents. DeskTopBinder V2 Pro is optional.

The unit's performance as a walk-up 33.6-Kbps fax, configured as tested with the fax and second line options, was also good, demonstrating a scan-to-memory speed that, at 1.57 seconds, is the fastest for tested products in this class, and good procedures for transmitting from memory after a failed communication. An optional fax upgrade card adds JBIG compression and expanded functionality. This versatile unit also offers LAN fax, enabling users to send documents from their PCs. Faxes can be received to the exit tray or forwarded to the Document Server (from which users can retrieve, save, delete or print them), forwarded to a general e-mail address for manual distribution by an administrator, or forwarded to specific e-mail addresses (e.g., based on TTI or RTI).

Other features of the Ricoh Aficio 2022SP include slightly above-average standard and maximum paper capacities of 1,100 sheets and 3,100 sheets, respectively; standard automatic duplexing; an optional 50-sheet RADF; 1 to 99 multicopy capability; and 100 copy control codes (optionally expandable to 500). The Ricoh Aficio 2022SP is configured standard with a 128-MB RAM and a 20-GB hard drive that supports print-and-hold functions such as secure print and proof print, as well as scanning

continued

General Appraisal *continued*

of hardcopy documents into storage on the device, which can later be printed on demand from the control panel. Output options include a choice of finishers: the tested 1,000-sheet finisher, which offers three-position stapling of up to 50 sheets per set; and a 500-sheet finisher, which staples up to 30 sheets per set in one position.

Shortcomings

BLI test technicians observed only one minor shortcoming of the Ricoh Aficio 2022SP in the tests: Ease of adjusting paper drawers was rated "Fair."

Pricing Analysis And Summary

BLI's retail pricing analysis indicates that the Ricoh Aficio 2022SP is priced competitively with the average for comparably equipped models in the 17- to 27-ppm speed range. Moreover, the unit's supplies cost per page is slightly lower than the average for tested Segment 2 models. Consequently, because of its outstanding overall performance in BLI's tests, including its flawless reliability and outstanding productivity, the Ricoh Aficio 2022SP is highly recommended by BLI for offices in need of a multifunctional product for monthly volumes of up to 25,000 impressions.

Copy Quality:

Text: Good
Line art: Good
Halftones: Good
Solids: Good

Print Quality:

Text: Good
Line art: Good
Halftones: Good
Solids: Good

Ease of use: Good

Ease of maintenance: Good

Estimated waste: Low

Estimated downtime: Low

Misfeeds: 0

Misfeed rate: Not applicable

Total service calls
(including PMs): 0

MIBF: Not applicable

MIBS: Not applicable

TEST RESULTS AND OBSERVATIONS

Test equipment: BLI's dedicated test network, consisting of Windows NT 4.0 servers, a Microsoft Exchange server, Windows 98, Windows 2000 and XP workstations, 10BaseT/100BaseTX network switches and CAT5 cabling.

TEST RESULTS AND OBSERVATIONS *continued*

Reliability

PMS/Malfunctions	Service Required	Meter Count (Impressions)	Impressions Between Service
Meter count (beginning of test)		0	
End of test period		52,500	
Total Misfeeds/Misfeed Rate	0 / Not applicable		
Service Calls	0		
PMS*	0		
Total Service Calls (including PMS)	0		
M.I.B.F. ¹	Not applicable		
M.I.B.S. ²	Not applicable		
¹ Mean Impressions Between Failures (To obtain this number, BLI divides the total number of impressions produced during the test period by the number of service calls required. In actuality, it reflects the average number of impressions produced without a malfunction.)			
² Mean Impressions Between Service (To obtain this number, BLI divides the total number of impressions produced during the test period by the number of service calls, including preventive maintenance calls, required. In actuality, it reflects the average number of impressions produced without a service call.)			

Additional observations: 1) The “offline” soft key within the print menu will not take the current print job off line. The job will continue until it is complete.

Ease of replacing toner: Good. Toner replacement was a simple and clean procedure.

Toner replacement possible during print/copy run: No.

Maintenance

Ricoh states that the expected yield of the organic drum, developer and drum blade is 60,000 impressions and the PM interval is 120,000 impressions. (Unless otherwise noted, all of the above consumables that would normally be replaced during the course of this test met or exceeded the life expectancy specified by the vendor.)

Guarantee/Warranty: The Ricoh Aficio 2022SP is backed by a 90-day warranty to the end-user (180-day warranty to the dealer).

Service pricing: Contact your local dealer for service contract pricing.

User-Replaceable Consumables

Toner cartridge: Suggested retail price, \$38.42. Manufacturer’s rated yield, 11,000 pages at 6% page coverage.

TESTED TONER YIELD/ COST PER PAGE

Toner Yield (Impressions)	Impressions Per Gram
20,319	56.4
Toner Cost Per Page	Supplies Cost Per Page*
0.189¢	0.822¢

Toner cartridge net weight: 360.0 grams

* Based on suggested retail pricing, BLI’s tested toner yield (based on 6% coverage) and Ricoh’s rated yield for the drum/developer unit.

TEST RESULTS AND OBSERVATIONS *continued*

Ease of Operation

Documentation: Good. A total of five printed manuals were included with the tested configuration, which included the standard print/scan controller and the fax option.

Ease of use: Good. The 8-1/2" x 3-1/4" LCD control panel was easy to use, with each function (copy, fax, scan, document server and print) having its own dedicated key, and the menu system being easy to navigate. Ease of use as a printer was also good, both from the drivers and for setup. The "User Tools" key enables printing of a configuration page, a test page and PostScript or PCL font lists, editing of network parameters, changing default settings for the device, and viewing or printing total counters for each function or user.

Control panel status messages/job access: LEDs indicate when the device is printing and either transmitting or receiving a fax. The control panel indicates the number of sets remaining in a copy job, but does not display a job list or any status information regarding print jobs other than the application name and file name. Regardless of which function menu is currently displayed (copy, document server, scan, print or fax), the status of fax transmissions is always displayed.

Feedback to PC workstations: Good. Users can receive pop-up messages and can check status with the SmartDeviceMonitor utility. The Web utility also offers information on paper and supply status as well as print, fax, LAN fax and Document Server jobs.

Pop-up messages: Yes, error and print job completion notification.

Icon alerts: Yes, the SmartDeviceMonitor icon on the toolbar changes color to indicate an error condition, but the icon is small and easily goes unnoticed. Error conditions are depicted in red on the status window of the SmartDeviceMonitor utility.

Audible alerts: Yes.

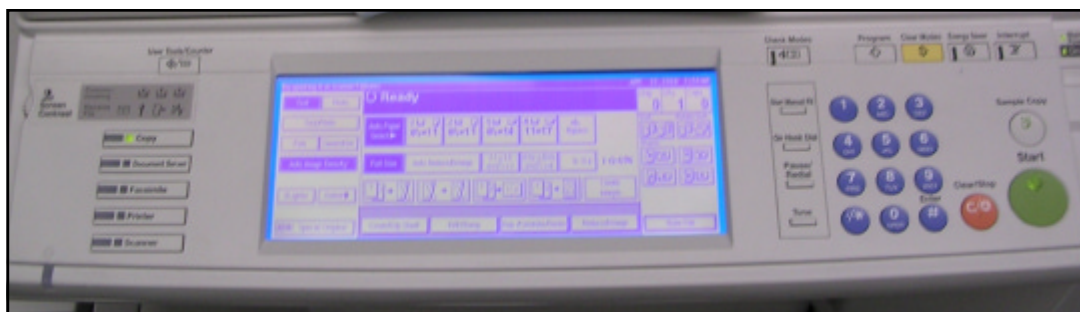
E-mail alerts: Yes. E-mail alerts for a wide range of conditions can be sent to one or more e-mail addresses. The alerts are set up through Web SmartDeviceMonitor.

Device status: Yes, via pop-up messages, by opening the SmartDeviceMonitor utility and via the embedded Web utility.

Print job status: Yes, via pop-up job completion notification and the "My Job List" feature of SmartDeviceMonitor. Job history is also available via the Web utility.

Paper supply gauge from driver/utility/Web: No/Yes/Yes.

Paper size status from driver/utility/Web: Yes/Yes/Yes. The RPCS driver offers paper size status; the PCL and PostScript drivers do not.



Ricoh Aficio 2022SP Control Panel

TEST RESULTS AND OBSERVATIONS *continued*

Ease of removing misfeeds: Good. Non-clamshell design; 15 misfeed locations, including three for the RADF and five for the finisher.

Ease of loading paper: Good.

Ease of adjusting paper drawers: Fair. The standard and optional paper drawers require the user to unlock a lever in order to move the side guides, remove and reinsert the length guide to adjust for length, and then turn a dial to select the new paper size. Once the dial is turned, the device reads the new paper size.

Operator error: If the user neglects to turn the dial to select the new paper size after changing paper size of a drawer, users may copy/print onto the wrong size paper and misfeeds may occur.

Throughput Capabilities/Materials

Paper output: The Ricoh Aficio 2022SP was tested with the optional finisher. See "Performance Of Tested Special Features." Output is facedown and in correct order.

Output tray capacity sensor: Yes.

Ability to process self-adhesive address labels: Avery 5351 labels performed satisfactorily in testing. (Ricoh recommends that users feed labels through the bypass tray and tray two only.)

Ability to process transparencies: 3M-PP2500 clear transparencies performed satisfactorily in testing. (Ricoh recommends that users feed transparencies through the bypass tray and tray two only.)

Ability to process tabs: The manufacturer does not recommend running tabs through the device.

Ability to process envelopes: The manufacturer recommends that envelopes be fed through either the second drawer or the bypass tray.

RICOH AFICIO 2022SP MULTITASKING EVALUATION*

Secondary Function Primary Function	SEND FAX	SEND E-MAIL	RECEIVE FAX	LAN FAX	PRINT	SCAN TO FILE	COPY
SEND FAX	Yes	Yes	Yes	Yes ¹	Yes	Yes	Yes
SEND E-MAIL	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RECEIVE FAX	Yes	Yes	Yes	Yes ¹	Yes	Yes	Yes
LAN FAX	Yes	Yes	Yes	Yes ¹	Yes	Yes	Yes
PRINT	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SCAN TO FILE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
COPY	Yes	Yes	Yes	Yes	Yes	Yes	Yes

¹ Although the system was equipped with dual modems, it waited to use the primary phone line for a LAN fax when the primary phone line was in use for the primary function. (3)

NOTE: (X) indicates number of occurrences. A "Yes" indicates that the user can initiate the secondary function while the primary function is taking place and that no further user intervention will be required for the secondary function to take place.

* Tested in print priority mode.

TEST RESULTS AND OBSERVATIONS *continued*

Multitasking **(More Than Two Functions/Jobs)**

Note: In addition to a single-user multitasking test, which evaluates a unit's ability to initiate or perform one function while another function is already in progress (see chart above), BLI also tests a multifunctional product's ability to handle multiple jobs that would be likely to stack up in a multi-user networked environment. Depending on the number of different functions, three to six different job matrixes are run on each multifunctional device. The job streams within each matrix are designed to test not only for concurrent operation of various functions, but also to uncover peculiarities pertaining to multitasking as it relates to various software programs (Adobe Acrobat, Adobe PageMaker, Microsoft Word 2000, Microsoft Excel and PowerPoint), paper sizes, copy/print job sizes and copy/print modes (e.g., simplex, duplex, finishing).

Mode priority: The default mode for the device (i.e., when reset or powered on) can be set by the key operator or administrator to either copy, document server, facsimile, printer or scanner. The administrator can also select a priority mode that determines which type of job will be handled first. Selections include display (gives priority to whatever function is currently being displayed at the control panel; for example, if a print job is running when a walk-up user presses the copy job key and starts a copy job, which changes the display to copy mode, the print job is paused to output the copy job), copier, document server, facsimile, interleave (enables multiple jobs to be output by alternating between several pages of each; different types of jobs can each be designated to be output to a different tray).

Interrupt: When the "Interrupt" key is pressed during a copy job, the user can program and scan in an additional copy job using all machine features. In testing, the current copy job stopped after the current set. After the job is complete, the device returns to a non-interrupted state and automatically resumes the interrupted job. The user can use the "Interrupt" key to interrupt a print job to program a copy job with no restriction regarding the features that can be selected. After a minute of non-usage, the print job automatically resumes.

Memory allocation: The unit uses separate memory for faxing, but the memory for copying, printing and scanning is shared.

Program ahead (reserve copy job) while copying: Yes. One copy job can be programmed while a copy job is running. To reserve a copy job, the user presses the touch-sensitive "Next Job" key to access the menu to program the job.

Program ahead (reserve copy job) while printing: Yes. Two copy jobs can be programmed when a print job is running. To reserve a copy job, the user presses the touch-sensitive key "Next Job" to access the menu to program the job.

Device/feature contention issues: None.

Performance of Copier Functions **Copy Quality**

Density of solid black copied image (based on eight readings corresponding to eight different locations on the original):

Density of original: Range, 1.71 to 1.77 (on a scale of 0 to 2.5, with 2.5 being as dark as would be possible under most circumstances).

Density of copy: Range, 1.36 to 1.40 (on a scale of 0 to 2.5, with 2.5 being as dark as would be possible under most circumstances).

Density range for products in this class tested to date: 1.02 to 1.77.

Copy quality:

Text: Good

Line art: Good

Halftones: Good

Solids: Good

Copier Productivity

Copying speed (8-1/2" x 11" copies):

First-copy time from the platen: 6.0 seconds (time was the same regardless of modes selected.)

First-copy time from the document feeder: 6.1 seconds (time was the same regardless of modes selected.)

Number of copies per minute excluding first copy: 23

Number of copies per minute including first copy: 21

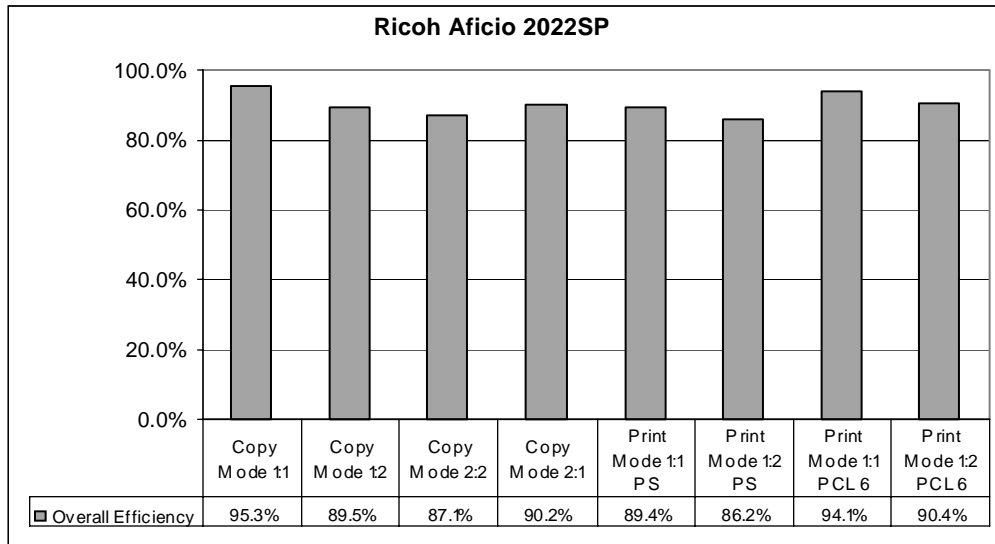
TEST RESULTS AND OBSERVATIONS *continued***COPY/PRINT EFFICIENCY FOR 1, 5, 10 AND 20 SETS**

Copy 1:1					
Sets	Min.	Sec.	PPM	Efficiency	Overall Efficiency
1	0	30.2	19.9	90.3%	90.3%
5	2	24.2	20.8	94.6%	92.4%
10	4	38.4	21.6	98.0%	94.3%
20	9	14.5	21.6	98.4%	95.3%
Copy 1:2					
Sets	Min.	Sec.	PPM	Efficiency	Overall Efficiency
1	0	36.7	16.3	74.3%	74.3%
5	2	30.3	20.0	90.7%	82.5%
10	4	43.9	21.1	96.1%	87.0%
20	9	23.7	21.3	96.8%	89.5%
Copy 2:2					
Sets	Min.	Sec.	PPM	Efficiency	Overall Efficiency
1	1	19.7	15.1	68.4%	68.4%
5	5	0.3	20.0	90.8%	79.6%
10	9	41.9	20.6	93.7%	84.3%
20	19	3.4	21.0	95.4%	87.1%
Copy 2:1					
Sets	Min.	Sec.	PPM	Efficiency	Overall Efficiency
1	1	13.4	16.3	74.3%	74.3%
5	4	52.1	20.5	93.4%	83.8%
10	9	28.8	21.1	95.9%	87.9%
20	18	42.1	21.4	97.2%	90.2%
Print 1:1 PS					
Sets	Min.	Sec.	PPM	Efficiency	Overall Efficiency
1	0	39.33	15.3	69.3%	69.3%
5	2	26.43	20.5	93.1%	81.2%
10	4	39.73	21.4	97.5%	86.7%
20	9	17.73	21.5	97.8%	89.4%
Print 1:2 PS					
Sets	Min.	Sec.	PPM	Efficiency	Overall Efficiency
1	0	43.85	13.7	62.2%	62.2%
5	2	30.85	19.9	90.4%	76.3%
10	4	44.83	21.1	95.8%	82.8%
20	9	26.53	21.2	96.3%	86.2%
Print 1:1 PCL 6					
Sets	Min.	Sec.	PPM	Efficiency	Overall Efficiency
1	0	38.16	15.7	74.4%	74.4%
5	2	25	20.7	97.9%	86.1%
10	4	38.37	21.6	102.0%	91.4%
20	9	14.95	21.6	102.3%	94.1%
Print 1:2 PCL 6					
Sets	Min.	Sec.	PPM	Efficiency	Overall Efficiency
1	0	42.88	14.0	66.2%	66.2%
5	2	29.61	20.1	94.9%	80.5%
10	4	43.3	21.2	100.2%	87.1%
20	9	25.02	21.2	100.5%	90.4%

Efficiency is tested using a 10-page document. In print mode, the document was printed using the PostScript PCL driver at 600-dpi resolution.

TEST RESULTS AND OBSERVATIONS *continued*

OVERALL COPY/PRINT EFFICIENCY



BLI obtains the overall efficiency for each copy/print mode by averaging the efficiency ratings (derived by dividing the tested speed of the device by the rated speed, and then multiplying by 100) for each run length (1, 5, 10 and 20 sets).

Performance of Printer Functions

General: The Ricoh Aficio 2022SP is configured standard with the internal print/scan controller and 10/100BaseT Ethernet network interface.

Print Quality

Density of solid black printed image (based on four readings corresponding to four different locations on the original): Range, 1.32 to 1.36 (on a scale of 0 to 2.5, with 2.5 being as dark as would be possible under most circumstances).

Density range for laser/LED printers tested to date: 1.00 to 1.74.

Print quality:

Text: Good

Line art: Good

Halftones: Good

Solids: Good

Applications compatibility (units are tested for compatibility on Windows 98 and Windows XP platforms with Microsoft Word 2000, Microsoft PowerPoint 2000, Adobe PageMaker 7.0, Adobe Photoshop 6.0 and Adobe Acrobat 5.0 using 25 application test files, which contain text, graphics, halftone images, tables, etc., enabling BLI technicians to evaluate memory usage, file processing, font-rendering and grayscale capability): Good.

Print drivers: The Ricoh Aficio 2022SP includes PCL 5e, PCL 6, RPCS and optional PostScript 3 print drivers for Windows 95/98, 2000, 2003, Me, XP and Windows NT 4.0. The print drivers tested for Windows 98 and XP were easy to use and offer many features. In addition to those listed in the chart below, they offer proof print (referred to by Ricoh as sample print), the ability to add a department or user code for tracking, the ability to save commonly used job settings for one-click selection from the driver and the ability to view job settings list (i.e., job review). Other features include chaptering; the ability to print the date and time as well as page numbers on the job; and poster mode to name a few. The configuration of the device is automati-

TEST RESULTS AND OBSERVATIONS *continued*

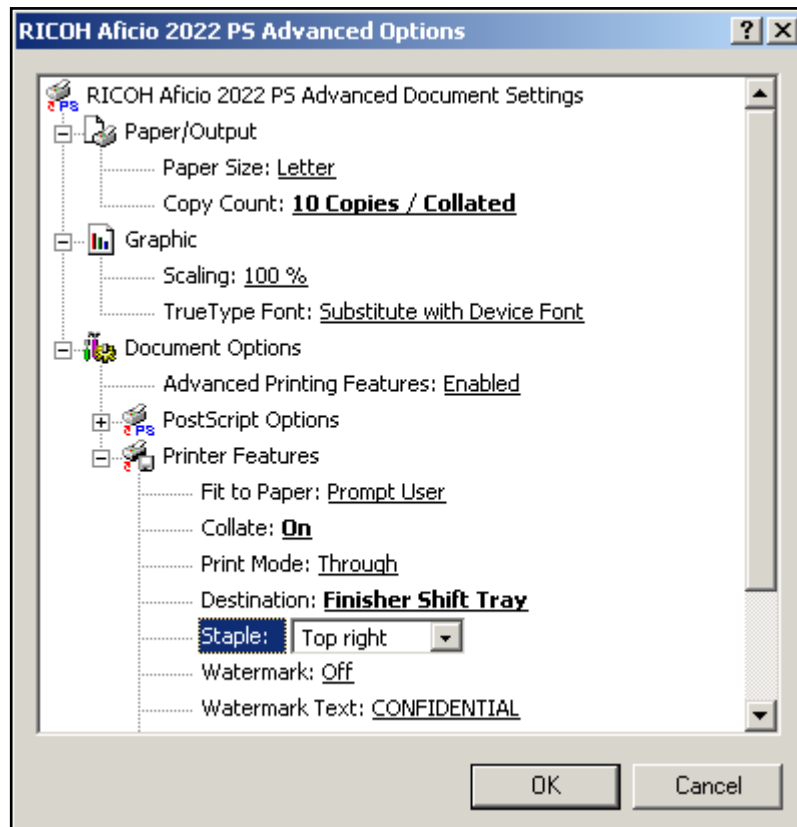
cally detected and updated to the PCL and RPCS drivers via the port that is created for network printing after installing the SmartDeviceMonitor utility, eliminating the need for an administrator to manually identify how the unit is configured. The drivers offer a graphical representation of the device, with the user able to select the desired paper

source or exit tray, for example, by clicking on the appropriate area of the graphic image. The PCL 5e and PCL 6 drivers were very similar in layout and appearance, whereas the RPCS and PostScript each have a different look and feel. Any differences in functionality are highlighted below.

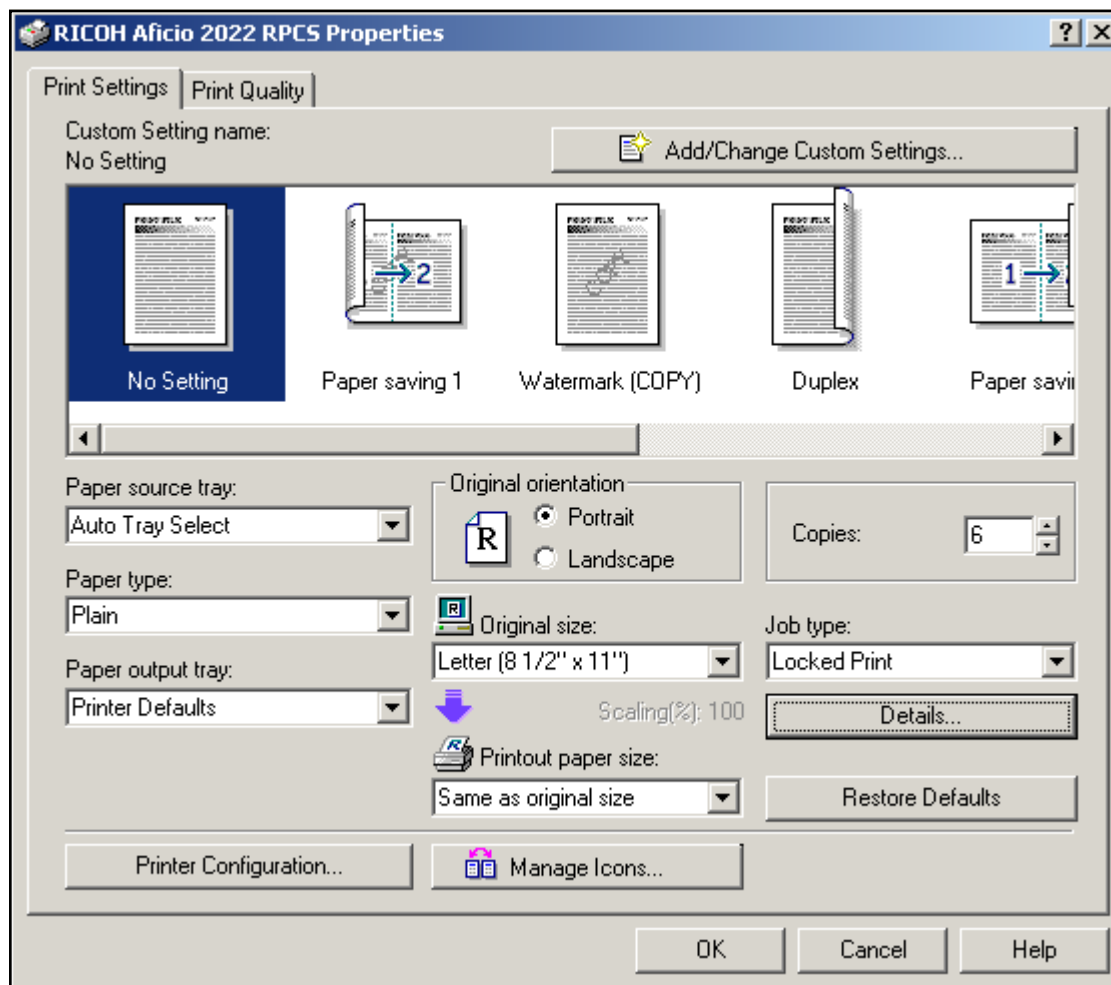
RICOH AFICIO 2022SP PRINT DRIVER FEATURES

	Windows 98 PCL 5e	Windows 98 PCL 6	Windows 98 RPCS	Windows XP PCL 5e	Windows XP PCL 6	Windows XP RPCS	Windows XP PostScript
Auto Feature/ Device Detection	Yes	Yes	Yes	Yes	Yes	Yes	No
Booklet Printing	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Collate Sets	Yes ¹	Yes ¹	Yes ¹	Yes ¹	Yes ¹	Yes	Yes
Max Paper Sources Per Job	5	5	5	5	5	5	One
Mirror Image	No	No	No	No	No	No	Yes
Negative Image	No	No	No	No	No	No	Yes
N-up Printing	2 to 16	2 to 16	2 to 16	2 to 16	2 to 16	2 to 16	2 to 16
Overlay	No	No	Yes	No	No	Yes	No
Paper Gauge	No	No	No	No	No	No ²	No
Print and Hold	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Proof Print	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quantity Selection	Up to 999	Up to 999	Up to 999	Up to 999	Up to 999	Up to 999	Up to 9,999
Reduction/ Enlargement	25% to 400%	25% to 400%	20% to 300%	25% to 400%	25% to 400%	25% to 400%	1% to 1,000%
Resolution Modes	300 x 300 600 x 600	600 x 600	600 x 600	300 x 300 600 x 600	600 x 600	600 x 600	600 x 600
Save Settings	Yes	Yes	Yes	Yes	Yes	Yes	No
Secure Printing	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Watermarks/ Custom Watermarks	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/No

¹ Although there is a selection, it is ghosted out and cannot be turned on or off.

TEST RESULTS AND OBSERVATIONS *continued***Windows XP PostScript Advanced Screen**

TEST RESULTS AND OBSERVATIONS *continued*



Windows XP RPCS Paper Settings Screen

Simultaneous RIP and print: Yes. Printing begins while the document is still being RIPped. Additional print jobs download to the controller. The number of jobs is dependent on resources, with a maximum of 150 jobs.

Send once/print many: There was no effect on file size when collate is chosen from the Windows print screen within an application. It should also be noted that the RPCS driver offers an "Ignore Application Collate" selection.

TEST RESULTS AND OBSERVATIONS *continued***Print Productivity****TESTED RASTER TIMES/PRINT SPEEDS****PostScript**

Windows XP PostScript	Word	PageMaker	Photoshop	Acrobat	Photoshop
File Type	Text	Graphic/Text	Graphic	Graphic/Text	Graphic
File Extension	.DOC	.PM6	.TIF	.PDF	.JPG
Pre-Raster File Size	114 KB	116 KB	20 MB	426 KB	248 KB
Post-Raster File Size	119 KB	129 KB	41.3 MB	775 KB	2.17 MB
First-Page Time (Seconds)	14.8	13.22	57.83	14.53	13.78
Speed Excluding First Page (PPM)	22.47	22.45	22.46	22.44	22.39
Speed Including First Page (PPM)	20.04	20.60	15.42	20.39	20.33

PCL 6

Windows XP PCL 6	Word	PageMaker	Photoshop	Acrobat	Photoshop
File Type	Text	Graphic/Text	Graphic	Graphic/Text	Graphic
File Extension	.DOC	.PM6	.TIF	.PDF	.JPG
Pre-Raster File Size	114 KB	116 KB	20 MB	426 KB	248 KB
Post-Raster File Size	52.6KB	70.4 KB	52.6 MB	1.25 MB	283 KB
First-Page Time (Seconds)	12.28	12.42	19.94	15	12.36
Speed Excluding First Page (PPM)	22.43	22.43	22.44	22.46	22.44
Speed Including First Page (PPM)	20.74	20.74	19.60	20.33	20.72

Manufacturer's rated speed: 22 ppm.

All files are printed in a quantity equal to twice the manufacturer's rated speed for the device. The print speeds were tested at 600 dpi using the PostScript and PCL 6 print drivers.

First-page time indicates the time it took to RIP, image and deliver the first page of the test document set to the output tray.

Speed excluding first-page time indicates the time for printing the entire set of test originals, excluding first-page RIP and print times.

Speed including first-page time indicates the time for printing the entire set of test originals, including first-page RIP and print times.

Networking and connectivity: BLI technicians installed the Ricoh Aficio 2022SP, configured with the standard print controller, on BLI's dedicated test network using a Windows NT 4.0 server and a Microsoft Exchange server. Net-

work configuration, as well as installation of the print drivers, was simple. Prior to installation of the driver, the SmartDeviceMonitor utility is installed, which automatically locates devices on the network and creates a port.

TEST RESULTS AND OBSERVATIONS *continued*

The PCL 5e, PCL 6, RPCS and PostScript drivers can be auto-installed. Once the drivers are installed, the administrator chooses the SmartDeviceMonitor port and selects the device desired from the available devices automatically listed. No networking problems were encountered with the Ricoh Aficio 2022SP. Setup and use of the Aficio 2022SP and its utilities were very easy.

Administrative utilities: Users and administrators have access to a range of utilities for managing the device. SmartDeviceMonitor (formerly called SmartNetMonitor) automates the creation of the port for network printing, allows discovery and management of Ricoh and MIB-compliant non-Ricoh devices and provides users on the network with excellent feedback on device and print job status, including icon alerts and pop-up messages. Web SmartDeviceMonitor, available for free download from Ricoh's Web site, is a network device management utility that runs on a server on the network and is accessible to network users via their Web browser, eliminating the need for special software to run on each user's workstation. Although the download and installation took about 25 minutes (it includes an SQL database) and requires restarting the PC after installation, it provides a way for users to have access to extensive information regarding status without an administrator having to install software on each user's PC. It also provides extensive management capabilities to an administrator, including the ability to group devices according to certain parameters (e.g., the administrator could choose to have only devices experiencing an error condition displayed). In addition, the unit's embedded Web utility, Web Image Monitor, allows viewing of job logs for all functions, viewing of documents stored on the Document Server (the unit's hard drive), IP printing for authorized users (by using a browser to get to the Web utility and then submitting the job), and remote programming of fax destinations, e-mail addresses and scan-to-file destinations.

Auto run for administrative utility/print driver installation: Yes/Yes.

Job log/accounting: Yes.

Password protection/access rights: Yes. The administrator version of SmartDeviceMonitor, Web SmartDeviceMonitor and the embedded Web utility are passcode-protected so that only authorized users can make changes to network setup.

Device status: Yes.

Document manipulation: Yes. Jobs sent to the Document Server from the print driver or scanned into storage on the device can be merged into one file and printed.

Automatic port creation: Yes. Once installed, SmartDeviceMonitor automatically locates devices on the network and creates a port.

Network configuration from control panel/utility/Web: Yes/Yes/Yes.

Manipulate order of print jobs in queue/print priority levels: No.

Job status: Yes. Pop-up job completion notification is provided to end users. Users can also check the job history via the Web utility, SmartDeviceMonitor and Web SmartDeviceMonitor for LAN fax, walk-up fax and print jobs.

Remote manipulation of device/print job settings: Yes/No.

Multiple-device monitoring: Yes.

File downloading: No.

Consumables monitoring: Yes.

Preview or thumbnail image of file: Yes. Files scanned to the Document Server (but not print jobs) can be previewed or viewed.

Web-based administration: The embedded Web utility, which can be password-protected so that only users with the authorized password can make changes to the device, allows users to view LAN fax, walk-up fax, print and Document Server jobs and to monitor device status such as paper and toner supply. Administrators can remotely make changes to device settings. In addition, administrators and authorized users can access Web SmartDeviceMonitor via a Web browser, provided that the Web SmartDeviceMonitor utility has been downloaded from Ricoh's Web site and is running on a server on the network.

Performance of Standalone Fax Functions

Fax scanning speed: The average scanning speed is obtained from scanning into memory three originals using standard resolution and normal contrast settings; timing

TEST RESULTS AND OBSERVATIONS *continued*

begins when the "Start" button is pressed and continues until the last page exits onto the exit tray.

Fax scanning speed with 4% page coverage original: 1.57 seconds per page; range for fax machines tested to date, 1.57 to 10.00 seconds.

Fax scanning speed with 12% page coverage original: 1.58 seconds per page; range for fax machines tested to date, 1.58 to 13.53 seconds.

Transmitting from memory after a failed communication: Good.

Performance of LAN Fax Functions

General. The LAN fax driver and Address Book utility were easy to use. The LAN fax driver is selectable as any printer driver would be from the printer folder. It contains the IP address of the device and routes faxes through a print queue to be transmitted via the Aficio 2022SP's optional fax modem. When the user creates destinations for users and groups with the Address Book utility, the addresses automatically become selectable from within the LAN fax driver. Addresses can also be entered on the fly. It should be noted that when the unit is configured with two phone lines, all LAN faxes are transmitted using the primary phone line by default. So, for example, if the primary phone line is busy with a transmission or reception, the LAN fax will be held in queue until the line is free.

Composing and sending a LAN fax: The "LAN-Fax M3" driver is similar to the print-to-fax drivers of many Windows-based multifunctional products tested in that it requires the user to manually switch between the printer driver (used to print PC files) and the fax driver (used to send a LAN fax). After a document is created, for instance in Microsoft Word, the user faxes the document by selecting "LAN-Fax M3" as the default driver and either manually dialing the destination or selecting a destination programmed in the address book. The fax driver also supports setting up faxes for later transmission, cover pages, resolution selection, storage to the document server and assignment of user or department codes for tracking purposes.

Receiving a LAN fax: Good. The Ricoh Aficio 2022SP can receive LAN faxes to the exit tray, or can automatically forward all faxes to the hard-disk drive (from which they

can be retrieved via the Web Image Monitor), to an administrator's e-mail address (the administrator would then route received faxes to the intended recipients), or, via rules-based routing (e.g., based on TTI or RTI), to e-mail addresses.

Printing a LAN fax: Good.

PC-fax logs/reports: A log of LAN faxes and fax receptions is accessible via the Web utility.

Performance of Scanner Functions

In its standard configuration, the Ricoh Aficio 2022SP offers embedded scan to e-mail, scan to file (via FTP and SMB) with support for TIFF, PDF and JPG file formats, and support for T.37 Internet fax (requires fax option), which all performed well in BLI's tests. The scan-to-e-mail function supports LDAP, so users can access e-mail addresses on a network mail server directly from the control panel of the Aficio 2022SP, eliminating the need to program e-mail addresses that may already reside on a mail server. In addition, e-mail destinations, along with fax destinations and folder/FTP locations for scanning to file, can be conveniently programmed remotely from the Web utility. Destinations can also be entered on the fly via the control panel's QWERTY keypad. After doing so, the user may press the "Program" key to save an address in local storage on the device for future use. The system comes bundled with DeskTopBinder Lite to enable users to work with scanned documents.

In BLI's test environment, the network-connected Aficio 2022SP sent a scanned document to and from multiple PCs through a Microsoft Exchange mail server. This capability is an alternative to faxing that enables users to save money by avoiding telephone usage costs that would be incurred by faxing. When a fax is received by an e-mail address, it is in the TIFF-F format.

At the control panel, walk-up users first select the "Scanner" key and then select either the icon for scanning to file or for scanning to e-mail destinations. Destinations, which can be programmed either at the control panel or via the Web utility, appear on the control panel as selectable choices. Up to 2,000 destinations can be programmed. Multiple destinations of any type, such as scan to e-mail (up to 500) and scan to file (up to 50), can be selected for the same session. Users may also select duplex or single-sided scan, resolution (100, 200, 300, 400 or 600 dpi), scan paper size, density, original

TEST RESULTS AND OBSERVATIONS *continued*

type, mixed size, up to five presets (stored settings for commonly used scan jobs), name the file and enter a sender's name, subject and message. Once all settings are made, the user presses the "Start" key to scan.

From DeskTopBinder Lite (DeskTopBinder Professional V2 is available as an option), which must be loaded on users' workstations, users can edit scanned documents using tools

such as rotate and convert (black and white, grayscale). Any scanned image in the scan area of the Document Server can be dragged and dropped to any drive or directory on the network available for storage via the Web utility or DeskTopBinder.

OCR (Optical Character Recognition): Not applicable. An OCR application is not bundled with the unit.

PERFORMANCE OF TESTED SPECIAL FEATURES

Stored Job Functions

In addition to sending secure and proof print jobs to the Aficio 2022SP's 20-GB hard drive, which can be released from the control panel when desired, users may also scan hardcopy documents into storage on the device (Document Server function). The user can later select documents stored in the Document Server, merge documents to print them as one and change settings before printing them from the control panel.

Document Feeder

The optional reversing automatic document feeder (RADF) will automatically feed up to 50 sheets ranging in size from 5-1/2" x 8-1/2" to 11" x 17". Acceptable paper weights, 11 to 34 lbs.

Document feeding speeds (8-1/2" x 11" originals; speeds were the same regardless of the automatic modes selected):

1:1 copy mode: 27.9 originals per minute.

1:2 copy mode: 23.0 originals per minute.

2:2 copy mode: 8.4 originals, or 16.8 images, per minute.

2:1 copy mode: 8.4 originals, or 16.8 images, per minute.

Bypass

The standard "non-intelligent" 100-sheet stack-feed bypass has double-gear, adjustable side guides that move in sync to accommodate sheets ranging in size from 5-1/2" x 8-1/2" to 8-1/2" x 14" and in weight from 14 to 42 lbs. The bypass is automatically selected when sheets are placed in the tray and the user can program the paper size of the sheets in the bypass by selecting a hard key that displays a menu to program the paper size on the touch-screen display. It should be noted that a lever must be raised and lowered when adding paper to the bypass.

Finisher

The optional finisher holds 1,000 sheets ranging in size from 8-1/2" x 11" to 11" x 17" in the offset tray and 250 sheets in the top tray. The finisher features three-position stapling of up to 50 sheets per set. Acceptable paper weights, 16-lb. bond to 42-lb.

ENVIRONMENTAL SPECIFICATIONS

Electrical system: 120 V, 60 Hz, 12 amps. The unit tested had a three-wire cord (grounded), 6' in length, and carried UL approval for the United States and Canada.

Paper fault: None. (Georgia-Pacific Spectrum Xerographic Bond and Georgia-Pacific GeoCycle recycled paper containing 30% post-consumer fiber were used in this test unit.)

PHYSICAL SPECIFICATIONS

DIMENSIONS AND WEIGHTS				
Unit/Accessories	Height	Width	Depth	Weight
Aficio 2022SP	28"	21.7"	23.8"	121.3 lbs.
Finisher:	31.1"	20.8"	20.5"	55.2 lbs.

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BACKGROUND INFO

Dataquest Segment 2
 SRP (USA/ Canada): \$5,245/\$7,125; Info not avail
 Manufacturing Status: New
 Domestic Intro Date: November 2003
 OEM: Ricoh (Japan)
 Also Sold As: Gestetner DSm622/DSm622sp; None/Lanier
 LD122; Savin 4022/4022sp
 Distribution: Dealers, branches and subsidiaries
 Mfr's Rec Mo Vol: Up to 35,000 copies



TYPE

Monochrome copier, MF
 Configuration/Scanner: Desktop, digital
 Toner: Dry, dual component

GENERAL SPECIFICATIONS/PAPER HANDLING

First-Copy Time: 4.9 sec
 Multicopy (Ltr/Lgl/Ldgr): 22 cpm/Info not avail/Info not avail
 Warm-Up Time: 15 sec
 Std Paper Source(s): Dual drawer
 Std Paper Capacity: 500/500 sheets
 Paper Weights: 14 to 42 lbs
 Bypass/Paper Weights: 100-sheet/14 to 42 lbs
 Max Paper Sources/Capacity: 5/3,100 sheets
 Max Original Size: 11 x 17
 Min/Max Output Size: 5-1/2 x 8-1/2/11 x 17
 Scan/Copy Resolution: 600 x 600 dpi/600 x 600 dpi
 Std/Max Copier Memory: 64 MB/192 MB, 20-GB HD
 Duplex: Auto (1:2,2:2,2:1)
 Capacity/Paper Sizes: Unlimited/5-1/2 x 8-1/2 to 11 x 17
 Document Feeder: Opt RADF
 Speed/Capacity: 22 opm/50 orig
 Paper Weights: 11 to 34 lbs
 Sorter (Bins/Capacity): None
 Stapler Sorter: None
 Bins/Stapling Capacity: Not applicable
 Stapling Positions: Not applicable
 Finisher: Opt finishers
 Tray/Stapling/Position(s): 500, 1,000/30, 50/1, 3
 Other: Opt shift sort tray; opt 2,000-sht LCT;
 one-bin tray holds 125 sheets; opt paper
 bank adds two 500-sheet drawers;
 electronic sort (rotate sort)

CONTROL PANEL

Keypad and touch screen
 Quantity Selector: 1 to 99 (0 to 9 keypad)
 Message Display: Yes
 Help Key: No

OPTIONS

RADF: \$1,265
 2,000-sheet LCT: \$1,395
 500-sheet finisher: \$995
 1,000-sheet finisher: \$1,410
 Paper bank/Platen: \$1,210/\$95
 One-bin tray/Shift sort tray: \$310/\$310
 Cabinet/HD option: \$175/\$350
 User account enhancement kit: \$175
 128-MB memory upgrade: \$ not avail
 Bridge unit/Key counter bracket: \$190/\$95

MAINTENANCE

Fuser Rollers: Two
 Yield: Info not avail
 Cleaning Blades: Drum blade
 Yield: Info not avail
 Other: Info not avail
 Yield: Info not avail
 Fuser Oil: Not required
 PM Schedule: 120,000

COPIER FEATURES

Automatic Features: AES, AMS, APS, AS, ASO, ATS
 Book Copy: Std Job Time: No
 Booklet Mode: Std Language: Std
 Color: No Margin Shift: Yes
 Copy Control: 100 Neg/Pos: Yes
 Covers: Std OHP Interleaving: Yes
 Editing: No Photo Mode: Yes
 Energy-Save: Yes Poster Mode: No
 Erase: Std Preset R/E: 7R,5E
 Image Insert: No Program Ahead: Std
 Image Overlay: No Sheet Insertion: No
 Image Repeat: Yes Stamping: Std
 Image Rotate: Yes Timer: No
 Interrupt: Yes 2-in-1: Std
 Job Build: Yes XY Zoom: Yes
 Job Programs: 10 Zoom Range: 25 to 400 (1%)
 Other Features:
 Generation copy mode; border and center erase; paper
 designate; shortcut keys; double copy mode; three
 languages; user programs; 2- to 16-in-1 copying; chapteriza-
 tion; mixed-size originals; date and page number stamping

ADDITIONAL INFORMATION

Dimensions (H x W x D): Info not avail
 Weight: 165 lbs
 Power Requirements: 120 V, 6 A
 Dedicated Outlet: Not required
 Energy Star-Compliant: Yes
 Operating Noise Level: 68.5

COMMENTS

Scan once, print many; opt account enhancement kit increases
 the number of copy control accounts to 500

SUPPLIES

Photoconductor: Organic drum unit
 Yield: 60,000
 Price: Priced by dealer
 Toner: 360g btl
 Yield: 11,000
 % Coverage: 6%
 Price: Priced by dealer
 Developer: Incl in drum unit
 Yield: 60,000
 Price: Incl in drum unit

Info not avail = Info not provided by MFR. Specs were obtained from manufacturer/distributor and not confirmed by BLI testing.
 (FAD IMAGE #12805)

MULTIFUNCTION MODES

<i>Copier:</i>	Std	<i>Fax:</i>	Opt
<i>Internet Fax:</i>	Opt	<i>Network Fax:</i>	Opt
<i>Network Printer:</i>	Opt/Std	<i>PC Fax:</i>	No
<i>Printer:</i>	Opt	<i>Scanner:</i>	Opt/Std

CONNECTIVITY SPECIFICATIONS

<i>Operating System Support:</i>	Mac 8.6-9.2, 10.1, 9.x, NT 4.0*
<i>Parallel Interface:</i>	Std
PC Fax/Print/Scan:	No/Yes/Yes
<i>Serial Interface:</i>	Opt/Std
PC Fax/Print/Scan:	No/Yes/No
<i>USB Interface:</i>	Opt
PC Fax/Print/Scan:	No/Yes/No
<i>Network Interface:</i>	Opt Ethernet/Std Ethernet**
Interface Type:	10/100BaseT, 802.11b

LAN Fax/Print/Scan: Yes/Yes/No

Networks Supported:

NetWare:	Yes
Windows NT:	Yes
AppleTalk:	Yes
UNIX:	Yes
AS/400:	Yes
Other:	No

FACSIMILE SPECIFICATIONS

<i>Scanner Technology:</i>	CCD
<i>Compression Method:</i>	MH/MR/MMR***
<i>Modem Speed:</i>	33.6 Kbps
<i>Max TX Resolution:</i>	203x196 lpi****
<i>Gray Scale/Halftones:</i>	256 levels
<i>Std/Max Fax Memory:</i>	8 MB/32 MB
<i>Min/Max Orig Size (W x L):</i>	5-1/2 x 8-1/2/11 x 17
<i>Max Paper/Print Width:</i>	Info not avail
<i>Effective Scanning Width:</i>	Info not avail
<i>Correct-Order Output:</i>	Info not avail
<i>Batch Files:</i>	INA
<i>Battery Backup:</i>	1 hr
<i>Confid TX/RX:</i>	Yes/Yes
<i>Dual Lines:</i>	Opt
<i>Multi Access:</i>	Yes

<i>Polling:</i>	Yes
<i>Relay Request:</i>	INA
<i>Smoothing:</i>	Yes
<i>Timers:</i>	INA
<i>Transfer Hub:</i>	INA

Dialing Capabilities

Broadcasting (Groups/Dest):	64/500
Redial (Attempts/Intervals):	Info not avail
One Touch:	INA
Speed Dial:	500

Other: ***JBIG compression option; ****400-dpi option;
serial broadcasting (500 numbers); image rotation;
book faxing; handset

CONNECTIVITY/MF OPTIONS

<i>Print/Scan kit Type 2027:</i>	\$2,100
<i>Fax option:</i>	\$1,095
<i>G3 interface kit:</i>	\$650
<i>Handset:</i>	\$65
<i>JBIG/Function upgrade card:</i>	\$430
<i>400 dpi & page memory:</i>	\$185
<i>Adobe PostScript 3:</i>	\$595
<i>USB interface:</i>	\$100

INTERNET FAX SPECIFICATIONS

<i>TX/RX:</i>	Info not avail
<i>Fax-To-E-Mail:</i>	Info not avail

PC/NETWORK FAX SPECIFICATIONS

<i>Connection Type:</i>	Network
<i>Type:</i>	Info not avail
<i>TX/RX:</i>	Info not avail

PRINTER SPECIFICATIONS

<i>Engine Mfr/Model:</i>	Ricoh/Aficio 2022
<i>Compatibility:</i>	IBM PC, Mac
<i>Speed:</i>	22 ppm
<i>Max Print Area:</i>	Info not avail
<i>Enhanced Resolution:</i>	Info not avail
<i>Unenhanced Resolution:</i>	600 x 600 dpi
<i>Std/Max Printer Memory:</i>	Shared
<i>Controller Mfr/Model:</i>	Ricoh/Info not avail
Processor/Bits/MHz:	RM5261A/INA/400
PDL/PCL:	PCL 5e/6, opt Adobe PostScript 3
<i>Controller Mfr/Model:</i>	Not applicable
Processor/Bits/MHz:	Not applicable
PDL/PCL:	Not applicable
<i>Controller Mfr/Model:</i>	Not applicable
Processor/Bits/MHz:	Not applicable
PDL/PCL:	Not applicable

Other: Secure print; forms overlay; watermarks; sample print

SCANNER AND IMAGE MANAGEMENT SPECIFICATIONS

<i>Connection Type:</i>	Network
<i>Technology/Speed:</i>	CCD/Info not avail
<i>Max Resolution:</i>	600 x 600 dpi
<i>TWAIN/ISIS Compatible:</i>	Yes/No
<i>Scan/Image Software:</i>	Std ScanRouter Lite

<i>OCR Software:</i>	Std DeskTopBinder Lite
<i>File Mgmt Software:</i>	Std DeskTopBinder Lite
<i>Scan-To-E-Mail:</i>	Yes

Other: Duplex scanning; LDAP support; scan to folder via
SMB & FTP; opt ScanRouter Pro and DeskTopBinder Pro

COMMENTS

*Also 2000, 2003 Me and XP; QWERTY keypad; 2022SP is bundled w/the Print/Scan Kit Type 2027; Print/Scan Kit incl 128 MB, 20-GB HD, NIC & print/scan opt; **also 802.11b & Bluetooth

<i>1394 interface unit:</i>	\$475
<i>802.11b interface:</i>	\$542
<i>Bluetooth interface:</i>	\$360
<i>File format converter:</i>	\$400
<i>DeskTopBinder & 5 user license:</i>	\$ not avail
<i>DeskTopBinder & 10 user license:</i>	\$ not avail
<i>ScanRouter V2 Pro & DeskTopBinder V2 Pro:</i>	\$ not avail

Info not avail = Info not provided by MFR. Specs were obtained from manufacturer/distributor and not confirmed by BLI testing.
(FAD IMAGE #12805)